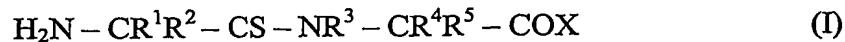


CLAIMS

1. A compound comprising a thiopeptide, or derivative or analogue thereof, the thiopeptide comprising a C-terminal carboxylic acid group, and a functional group for attachment to a drug, characterised in that the compound is adapted to carry or transport a drug.
2. A compound according to claim 1, wherein the compound is adapted to, or is capable of carrying or transporting a drug, preferably *in vivo*.
- 10 3. A compound according to either claim 1 or claim 2, wherein the compound is adapted to be transported by a PepT1 protein or a PepT2 protein.
- 15 4. A compound according to any preceding claim, wherein the thiopeptide comprises at least two amino acids or derivatives or analogues thereof.
5. A compound according to any preceding claim, wherein the compound comprises a thiadipeptide or a thiotripeptide or derivatives or analogues thereof.
- 20 6. A compound according to any preceding claim, wherein the compound comprises a serine, aspartate or glutamate residue as a C-terminal residue.
7. A compound according to any preceding claim, wherein the thiopeptide comprises at least one thio group, which thio group is attached at, or towards, an N-terminal 25 thereof.
8. A compound according to any preceding claim, the compound has formula I:-



30

wherein R^1 , R^2 , R^3 , R^4 , and R^5 are independently selected from a group consisting of a hydrogen; a linear or branched alkyl group; a dialkyl group; a N-alkyl group; and a side chain group of an amino acid residue; and wherein X is independently selected

from a hydroxyl group; an amino acid residue; an amide; an amide link to a third residue; a peptide; and a thiopeptide.

9. A compound according to any one of claims 1 to 7, wherein the compound has
5 formula II:-



wherein R¹, and R⁴ are independently selected from a group consisting of a hydrogen;
10 a linear or branched alkyl group; an alkyl chain attached to other functional groups;
and a side chain group of an amino acid residue.

10. A compound according to claim 9, wherein the functional group includes amine;
amide; ester; acid; alcohol; ether; thiol; thioether; and aryl, or aromatic compound.
15

11. A compound according to any one of claims 8 to claim 10, wherein R⁴ is adapted
to be attached to a drug molecule.

12. A compound according to any one of claims 8 to 11, wherein R⁴ comprises an
20 alcohol or a carboxylic acid group.

13. A compound according to any one of claims 8 to 12, wherein R⁴ comprises an
alkyl chain attached to an alcohol or a carboxylic acid group.

25 14. A compound according to any one of claims 13, wherein the alkyl group or alkyl
chain comprises a C₁-C₂₀ chain.

15. A compound according to any one of claims 8 to 14, wherein R⁴ is an amino acid
side chain group comprising an alcohol or a carboxylic acid group.

30 16. A compound according to any one of claims 8 to 15, wherein R⁴ is a side chain
group of any amino acid residue.

17. A compound according to any one of claims 8 to 16, wherein R⁴ is a side chain group of an amino acid side chain group independently selected from a group consisting of serine; threonine; glutamic acid; aspartic acid; and tyrosine.

5 18. A compound according to any one of claims 8 to 15, wherein R⁴ is a side chain group of serine; glutamic acid; or aspartic acid.

10 19. A compound according to any one of claims 8 to 15, wherein R⁴ comprising spacing means, which spacing means is adapted to distance the drug away from the thiopeptide when bound thereto.

15 20. A compound according to claim 19, wherein the spacing means comprises an alkyl chain, or an alkyl chain incorporating ether, amino, ester, amide or carbonyl groups, with appropriate functionalisation at it's termini for attachment to the thiopeptide compound and the drug molecule.

21. A compound according to either claim 19 or claim 20, wherein the spacing means comprises [-CH₂-]_n, wherein the value of n is an integer of at least 1.

20 22. A compound according to either claim 19 or claim 20, wherein the spacing means comprises [-CH₂-O-CH₂-]_n, wherein n is an integer of at least one.

25 23. A compound according to any one of claims 8 to 22, wherein R¹ comprises a side chain group of any amino acid residue.

30 24. A compound according to claim 23, wherein the amino acid side chain group of R¹ is independently selected from a group consisting of (i) H (glycine); (ii) Me (alanine); (iii) CH₂Ph (phenylalanine); (iv) CHMe₂ (valine); (v) CH₂OH (serine); (vi) CH₂SH (cysteine); (vii) CH₂CO₂H (aspartate); (viii) CH₂CONH₂ (asparagine); and (ix) (CH₂)₄NH₂ (lysine).

25. A compound according to any preceding claim, wherein a functional group to which a drug is attached is protected by a protection group.

26. A drug carrier comprising a thiopeptide, or derivative or analogue thereof.

27. A drug carrier according to claim 26, wherein the thiopeptide, or derivative or analogue thereof comprises the thiopeptide, or derivative or analogue thereof
5 according to any of claims 1 to 25.

28. A drug conjugate comprising a drug, which drug is linked to a compound according to any of claims 1 to 25, or a drug carrier according to either claim 26 or claim 27.
10

29. A drug conjugate according to claim 28, wherein attachment of the drug to the compound or drug carrier is by means of an ester linkage, ether linkage or an amide linkage.
15

30. A drug conjugate according to either claim 28 or claim 29, wherein attachment of the drug occurs at residue 1 or 2 of the compound or drug carrier.
20

31. A drug conjugate according to any of claims 28 to 30, wherein the compound or the drug carrier is capable of being released or detached from the drug molecule.
25

32. A drug conjugate according to any of claims 28 to 31, for use as a medicament.
33. Use of the conjugate according to any of claims 28 to 31 for the preparation of an orally administrable medicament.
34. An assay adapted to detect transportation of a conjugate according to any of claims 28 to 32 from a first side of a membrane to a second side of a membrane, the assay comprising detection means adapted to detect the presence of the conjugate on first and second sides of the membrane.
35. An assay according to claim 34, wherein the detection means is adapted to detect UV absorption of the thiopeptide.
30

36. A method of treating an individual, the method comprising administering to an individual in need of such treatment a conjugate according to any of claims 28 to 32.

5 37. A method of treating an individual according to claim 36, wherein the drug conjugate comprises a drug molecule attached to a compound according to any of claims 1 to 25 or a drug carrier according to either claim 26 or 27.

38. A compound or drug carrier substantially as herein described with reference to, or as illustrated by, the figures.

10

39. A method substantially as herein described with reference to, or as illustrated by, the figures.

15